

### **What is Claimed Is:**

1. A process for producing a photochromic lens, said process comprising the steps of:

(a) dissolving a photochromic dye in a solution containing a pre-polymer of an elastomer;

(b) coating a lens with said solution; and

(c) treating said lens to form an elastomeric film containing said photochromic dye on said lens.

2. The process of claim 1 wherein said elastomer is selected from the group consisting of: silicones, polyurethanes, thermoplastic elastomers, fluoroelastomers, copolyester elastomers, chlorosulfonated polyethylenes, neoprenes, polydimethylsiloxanes ethyl vinyl acetates, polysulfates and mixtures thereof.

3. The process of claim 1 wherein said elastomer is a polyurethane.

4. The process of claim 1 wherein said solution contains a monomer.

5. The process of claim 4 wherein said monomer is an acrylate.

6. The process of claim 1 wherein said solution contains a solvent.

7. The process of claim 6 wherein said solvent is selected from the group consisting of: n-methyl pyrrolidone, tetrahydrofuran, glycol ether, ethylene glycol monobutyl ether, and mixtures thereof.

8. The process of claim 1 wherein said photochromic dye is selected from the group of reversible photochromic compounds consisting of: spirooxazine, naphthopyran, chromene, spiroindolinonaphthoxazine, and mixtures thereof.

9. The process of claim 1 wherein the composition of the lens is selected from the group consisting of optical quality resin materials consisting of: diethylene glycol diallyl carbonate, allyl diglycol carbonates, allylic esters, acrylic esters, acrylates, methyl, allyl and butyl methacrylates, polycarbonates, styrenics, polyesters, allyl diglycol carbonates, triallyl cyanurate, triallyl phosphate, triallyl citrate, diallyl phenyl phosphonate, urethanes, epoxies and silicone.

10. The process of claim 9 wherein said optical quality resin is a polycarbonate resin.

11. The process of claim 9 wherein said optical quality resin comprises allyl diglycol carbonate.

12. The process of claim 1 wherein said treating of the lens comprises air-drying the lens.

13. The process of claim 1 wherein said treating of the lens comprises heating the lens.

14. The process of claim 13 wherein said heating is performed at a temperature between about 85°C to about 110°C.

15. The process of claim 12 further comprising heating the lens at a temperature of between about 85°C to about 110°C.

16. The process of claim 1 wherein said treating of the lens comprises exposing the lens to infrared, visible, or ultraviolet light such that said pre-polymer forms said elastomeric film.

17. A photochromic lens comprising a lens coated with an elastomeric film in which a photochromatic dye is dispersed.

18. The lens according to claim 17, wherein said elastomeric film has a hardness of between about 30 to about 90 Shore A.

19. The lens according to claim 17, wherein said elastomeric film has a hardness of about 60 Shore A.

20. The lens according to claim 17 wherein said lens has an activation time of less than 30 seconds.
21. The lens according to claim 17, wherein said lens has a deactivation time of less than 30 seconds.
22. The lens according to claim 17, wherein said lens has a percent spectral transmission in the deactivated state of between about 75 to about 95 %T.
23. The lens according to claim 17, wherein said lens has a percent spectral transmission in the activated state of between about 10 to about 50 %T.
24. The lens of claim 17 wherein said elastomeric film is made from an elastomeric material selected from the group consisting of: silicones, polyurethanes, thermoplastic elastomers, fluoroelastomers, copolyester elastomers, chlorosulfonated polyethylenes, neoprenes, polydimethylsiloxanes, ethyl vinyl acetates, polysulfates and mixtures thereof.
25. The lens of claim 24 wherein said elastomeric film is made from a polyurethane.
26. The lens of claim of claim 17 wherein said photochromic dye is selected from the group of reversible photochromic compounds consisting of: spirooxazine, naphthopyran, chromene, spiroindolinonaphthoxazine, and mixtures thereof.

27. The lens of claim 17 wherein the composition of the lens is selected from the group consisting of optical quality resin materials consisting of: diethylene glycol diallyl carbonate, allyl diglycol carbonates, allylic esters, acrylic esters, acrylates, methyl, allyl and butyl methacrylates, polycarbonates, styrenics, polyesters, allyl diglycol carbonates, triallyl cyanurate, triallyl phosphate, triallyl citrate, diallyl phenyl phosphonate, urethanes, epoxies and silicone.

28. The lens of claim 27 wherein said optical quality resin is a polycarbonate resin.

29. The lens of claim 27 wherein said optical quality resin comprises allyl diglycol carbonate.